



## INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

# Air Quality: Ozone

[www.idem.IN.gov](http://www.idem.IN.gov)

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**Description:**

- Ozone is a gas composed of three (3) oxygen atoms, and can be good or bad depending on its location.
- Ozone occurs naturally in the stratosphere approximately ten (10) – thirty (30) miles above the earth's surface and forms a layer that protects life on earth from the sun's harmful rays.
- Ground-level ozone is one (1) of six (6) criteria air pollutants regulated by the Clean Air Act; it is located in the earth's lower atmosphere and is created by a chemical reaction between oxides of nitrogen (NOx) and volatile organic compounds (VOCs) in the presence of heat and sunlight. Therefore, ozone is known as a summertime pollutant, most prevalent in Indiana between May 1<sup>st</sup> and September 30<sup>th</sup>.
- Motor vehicle exhaust from sources such as cars, trucks, off-road vehicles, agricultural and construction vehicles, industrial emissions, gasoline vapors, and chemical solvents are among the major sources of NOx and VOCs that contribute to the creation of ozone.
- The United States Environmental Protection Agency (U.S. EPA) sets National Ambient Air Quality Standards (NAAQS) for ozone to protect public health and the environment.
  - In 1997, U.S. EPA set the standard at 0.08 parts per million (ppm).
  - In March 2008, U.S. EPA revised the standard to be 0.075 ppm, which became effective on May 27, 2008.

**Environmental Impacts:**

- Ozone can affect both human health and the environment.
- Ground-level ozone can cause respiratory problems for sensitive groups, such as the very young, elderly, or for people with asthma or other chronic respiratory problems.
- Ozone damages the leaves of trees and other plants, reduces crop and forest yields, and interferes with the ability of plants to produce and store food, making them more susceptible to disease, harsh weather, insects and other pollutants.
- Ozone, commonly referred to as smog, can stain and damage stone and other materials, causing aesthetic damage to landmarks and municipal property.
- Ozone and volatile chemicals can be carried long distances, leading to widespread air pollution.

**IDEM's Role:**

- The Indiana Department of Environmental Management (IDEM) is responsible for protecting human health and the environment while providing for safe industrial, agricultural, commercial, and governmental operations vital to a prosperous economy.
- IDEM is responsible for protecting air quality in Indiana through the implementation of federal, regional, and state control measures, regulations, and ambient monitoring.
- IDEM works to protect and improve air quality through the monitoring of air quality, issuing of advisories, and the education of citizens and businesses on their role in improving air quality.

- IDEM announces Air Quality Action Days when state meteorologists predict conditions will be conducive to the formation of ground-level ozone. These advisories are intended to caution sensitive groups to limit their exposure and encourage all citizens to limit activities contributing to ozone formation.
- IDEM's Office of Air Quality permits businesses and restricts emissions that contribute to the formation of ground-level ozone.
- For areas not achieving (attaining) the air quality standard for ozone, IDEM works to help communities implement programs to achieve the standard as quickly as possible.
  - Under the current 1997 standard, two (2) counties and one (1) township are still designated as nonattainment; however, IDEM is working with U.S. EPA to improve air quality and redesignate these areas.
  - Based on current air quality data, twenty-five (25) counties would not meet the newly revised 2008 standard; however, IDEM projects twenty-one (21) or more of these counties will likely meet (attain) the stricter standard before the areas are recommended to U.S. EPA for designation as attaining or not attaining the standards.

### **Citizen's Role:**

- Monitor ozone levels in your area. IDEM's Web site, <http://www.in.gov/idem/4652.htm>, is updated daily with the latest ozone conditions across Indiana.
- Stay informed about Air Quality Action Days and adjust your exposure and contribution to ozone accordingly.
- In some areas of Indiana, citizens may be responsible for contributing as much as 60% of the precursors for ground-level ozone through the use of mobile sources, such as automobiles and lawn implements. There are a number of actions every citizen can take to reduce their contribution to ground-level ozone and improve overall air quality:
  - Carpool, walk, bike, or use public transportation when possible.
  - Avoid excess idling and drive-thru windows.
  - Consolidate trips and avoid fast-starts.
  - Postpone mowing the lawn or using gasoline-powered garden equipment until late evening.
  - Use energy efficient lighting and Energy Star appliances.
  - Turn off appliances and lights not in use to reduce emissions from energy production.
  - Adjust your thermostat by turning it up in the summer to reduce emissions from energy production.
  - Recycle to reduce the emissions related to producing paper, plastic, glass bottles, aluminum cans, and cardboard.

### **More Information:**

- For daily regional forecasts of Indiana air quality, including information on the Air Quality Index, please visit IDEM's SmogWatch Web site at <http://smogwatch.in.gov> or call the SmogWatch line at (800) 631-2871 or (317) 233-2318.
- For more information on the current eight (8)-hour ozone standard and attainment areas, please visit IDEM's Web site at <http://www.in.gov/idem/4841.htm>.
- For a map of ozone monitors and for the most recent Ozone Emission readings, please visit IDEM's Web site at <http://www.in.gov/idem/4652.htm>.
- For air quality questions and concerns, feel free to call IDEM's Office of Air Quality at (317) 233-0178.